REMARKS

In this preliminary amendment, Claims 1, 17 and 18 have been amended and Claims 11 and 20 have been cancelled. The application now includes Claims 1-10, 12-15, 17-19 and 21 with Claims 1, 17 and 18 being the only independent claims. Favorable reconsideration, in view of the above amendments and accompanying remarks, is respectfully requested.

As amended, Claim 1 defines the invention as a disc brake comprising: two brake shoes, which for generating a clamping force are pressable against both sides of a brake disc; a conversion device, which is connectable to a motor and which converts a driving motion of the motor into an actuating motion for actuating at least one of the brake shoes; a support device for taking up a reaction force, which upon generation of the clamping force is introduced into the conversion device; and two or more force sensors for measuring at least a fraction of the reaction force; wherein a bearing is disposed between opposing faces of the conversion device and the support device and the two or more force sensors are fastened in or on a component of the bearing spaced apart at different positions between the conversion device and the support device. None of the art of record, alone or in combination, discloses or suggests such a disc brake as defined in Claim 1.

In U.S. Patent No. 5,915,504 to Doricht, the force sensor 69 illustrated in Fig. 4 is not incorporated as part of a bearing disposed between opposing faces of the conversion device and the support device as recited in Claim 1. Rather, in Doricht, the bearing 66 illustrated in Fig. 4 is a cylindrical slide bearing for guiding the shaft of the pressure plate 60 as it moves. The present invention, by contrast, incorporates two or more force sensors in or on a component of the bearing. This has the highly advantageous effect that the force sensors themselves are isolated from moving parts of the mechanism which may cause wear and/or damage to the force sensors.

Regarding U.S. Patent No. 5,297,430 to Sonderegger et al., it would not be obvious to one of ordinary skill in the art of vehicular brake assemblies to use the teachings of the Sonderegger et al. reference. The Sonderegger et al. reference is concerned with a sensor arrangement 1 designed to function as a "load" washer

between a nut 2 and a cover 4, the nut installed on a stud 3. Specifically, the Sonderegger et al. reference discloses that the force sensor is for use in a marine diesel engine to monitor the forces transmitted by the stud 3, which correspond to the pressure curve in the cylinder. One of ordinary skill in the art of vehicular brake assemblies would not look into the art of force sensors of nuts and bolts of diesel engines when designing a vehicular brake assembly. Furthermore, in the Sonderegger et al. reference, the nut is rotatably screwed under pressure against the sensor device and this would be considered inappropriate by a person of ordinary skill in the art of brake assemblies. The force sensors in the present invention are subjected to continually repeated force applications and it has therefore been found desirable to incorporate the force sensors as part of the bearing to protect the sensors from damage and wear. In addition, there is no teaching in the Sonderegger et al. reference of any other use of the sensor device for anything other than a washer between a nut and a bolt of an engine. As a result, one of ordinary skill in the art of vehicle brake assemblies would not use the teachings of the Sonderegger et al. reference since washers between a nut and a bolt of an engine and brake assemblies are wholly unrelated structures and are not in the same field of art. Accordingly, it is believed that Claim 1, along with dependent Claims 2-10 and 12-15, are patentable over the art of record.

Claim 17 has generally been amended in a similar manner to that of Claim 1 and now recites that the disc brake includes at least two force sensors for receiving at least a fraction of the reaction force; wherein a bearing is disposed between opposing faces of the conversion device and the support device and the at least two force sensors are fastened in or on a component of the bearing spaced at an angular distance from one another with respect to an axis of rotation of the brake disc. Thus, for those reasons discussed above with respect to Claim 1, it is believed that Claim 17, along with dependent Claim 19, are patentable over the cited references.

Claim 18 has been generally been amended in a similar manner to that of Claim 1 and now recites that vehicle brake system disc brake includes two or more force sensors for measuring at least a fraction of the force; wherein a bearing is disposed

between opposing faces of the conversion device and the support device and the two or more force sensors are fastened in or on a component of the bearing spaced apart at different positions between the conversion device and the support device. Thus, for those reasons discussed above with respect to Claim 1, it is believed that Claim 18, along with dependent Claim 21, are patentable over the cited references.

In view of the above amendments and accompanying remarks, it is believed that the application is in condition for allowance. However, if the Examiner does not believe that the above amendments to the claims place the application in condition for allowance, the undersigned attorney respectfully requests a telephone conference with the Examiner to discuss the application and the prior art references prior to the issuance of a final action by the Examiner.